WHAT IS CLAIMED IS:

1. A method of measuring an optical characteristic of an optical system, said method comprising:

a first detecting step for causing each of plural light beams from a pattern to pass a predetermined position on a pupil plane of the optical system and subsequently imaging the light beams separately, and for detecting an imaging position of each light beam upon the pupil plane of the optical system;

a second detecting step for detecting error information related to a passage position as each light beam passes through the pupil plane; and

a third detecting step for detecting wavefront aberration of the optical system on the basis of the imaging position of each light beam upon the pupil plane and of the error information related to the passage position of each light beam on the pupil plane.

2. A method of measuring an optical characteristic of an optical system, said method comprising:

a first detecting step for causing each of plural light beams from a pattern to pass

through a pupil plane of the optical system and subsequently causing the light beams to interfere with each other and imaging them, and for detecting an imaging position upon the pupil plane of the optical system;

a second detecting step for detecting error information related to a passage position as each light beam passes through the pupil plane; and

a third detecting step for detecting wavefront aberration of the optical system on the basis of the imaging position of each light beam upon the pupil plane and of the error information related to the passage position of each light beam on the pupil plane.

3. An apparatus for measuring an optical characteristic of an optical system, said apparatus comprising:

position detecting means for detecting, when each of plural light beams from a pattern passes a predetermined position on a pupil plane of the optical system and the light beams are subsequently imaged separately, an imaging position of each light beam upon the pupil plane of the optical system;

storing means for storing error

information related to a passage position as each light beam passes through the pupil plane; and

calculating means for calculating wavefront aberration of the optical system on the basis of a result of detection made by said position detecting means and the error information stored in said storing means.

4. An apparatus according to Claim 3, wherein said position detecting means detects the imaging position of each light beam under different conditions which differ from each other in respect to the state of generation of a predetermined aberration of the optical system, and wherein said storing means stores error information obtained on the basis of results of detections made under the different conditions.

5. An apparatus according to Claim 4, wherein the predetermined aberration is at least one of spherical aberration, coma aberration and astigmatism.

6. An apparatus according to Claim 4, wherein the different conditions are established by performing at least one of i) changing a position of photoelectric converting means, for

detecting the imaging position, or of a wafer coated with a resist, in an optical axis direction of the optical system, ii) changing a wavelength of light for imaging the pattern, and iii) moving an optical element of the optical system.

7. An apparatus according to Claim 3, wherein the pattern comprises a substrate having a mark group formed in a region which can be regarded as one image height, and a light blocking plate having a pinhole formed at a position corresponding to a center of the region of the substrate, and wherein said light blocking plate is disposed between the substrate and the optical system.

8. An apparatus according to Claim 3, wherein the pattern comprises a substrate having a mark group formed in a region which can be regarded as one image height, and a light blocking plate having a pinhole formed at a position corresponding to a center of the region of the substrate, wherein said light blocking plate is disposed at a light entrance side of the substrate, and wherein each of marks constituting the mark group is provided by a grid pattern arranged so that substantially only zero-th order light can

pass through the pupil plane.

9. An apparatus for measuring an optical characteristic of an optical system, said apparatus comprising:

position detecting means for detecting, when each of plural light beams from a pattern passes through a pupil plane of the optical system and the light beams subsequently interfere with each other and are imaged, an imaging position of each light beam upon the pupil plane of the optical system;

storing means for storing error information related to a passage position as each light beam passes through the pupil plane; and

calculating means for calculating wavefront aberration of the optical system on the basis of a result of detection made by said position detecting means and the error information stored in said storing means.

10. An apparatus according to Claim 9, wherein said position detecting means detects the imaging position of each light beam under different conditions which differ from each other in respect to the state of generation of a predetermined aberration of the optical system,

and wherein said storing means stores error information obtained on the basis of results of detections made under the different conditions.

11. An apparatus according to Claim 10, wherein the predetermined aberration is at least one of spherical aberration, coma aberration and astigmatism.

12. An apparatus according to Claim 10, wherein the different conditions are established by performing at least one of i) changing a position of photoelectric converting means, for detecting the imaging position, or of a wafer coated with a resist, in an optical axis direction of the optical system, ii) changing a wavelength of light for imaging the pattern, and iii) moving an optical element of the optical system.

13. An apparatus according to Claim 9, wherein the pattern comprises a substrate having a mark group formed in a region which can be regarded as one image height, and a light blocking plate having a pinhole formed at a position corresponding to a center of the region of the substrate, and wherein said light blocking plate is disposed between the substrate and the optical

system.

14. An apparatus according to Claim 9, wherein the pattern comprises a substrate having a mark group formed in a region which can be regarded as one image height, and a light blocking plate having a pinhole formed at a position corresponding to a center of the region of the substrate, wherein said light blocking plate is disposed at a light entrance side of the substrate, and wherein each of marks constituting the mark group is provided by a grid pattern arranged so that substantially only zero-th order light can pass through the pupil plane.

15. An exposure apparatus, comprising:

a projection optical system for projecting a pattern of an original onto a substrate;

position detecting means for detecting, when each of plural light beams from a pattern passes a predetermined position on a pupil plane of the projection optical system and the light beams are subsequently imaged separately, an imaging position of each light beam upon the pupil plane of the projection optical system;

storing means for storing error

information related to a passage position as each light beam passes through the pupil plane; and

calculating means for calculating wavefront aberration of the projection optical system on the basis of a result of detection made by said position detecting means and the error information stored in said storing means.

16. A device manufacturing method, comprising the steps of:

exposing a wafer with a device pattern of an original through a projection optical system; and

developing the exposed wafer;

wherein wavefront of the projection optical system is measured by use of an optical characteristic measuring apparatus which comprises i) position detecting means for detecting, when each of plural light beams from a pattern passes a predetermined position on a pupil plane of the optical system and the light beams are subsequently imaged separately, an imaging position of each light beam upon the pupil plane of the optical system, ii) storing means for storing error information related to a passage position as each light beam passes through the pupil plane, and iii) calculating means for

calculating wavefront aberration of the optical system on the basis of a result of detection made by said position detecting means and the error information stored in said storing means.